

Taraxacum decastroi and *T. lacianense* (Asteraceae), two new species from the Iberian Peninsula

Antonio Galán de Mera* & José Alfredo Vicente Orellana

Departamento de Biología (Botánica), Facultad de Farmacia, Universidad San Pablo-CEU, Apartado 67, E-28660 Boadilla del Monte, Madrid, Spain (*corresponding author's e-mail: agalmer@ceu.es)

Received 13 Feb. 2009, revised version received 20 Apr. 2009, accepted 21 Apr. 2009

Galán de Mera, A. & Vicente Orellana, J. A. 2010: *Taraxacum decastroi* and *T. lacianense* (Asteraceae), two new species from the Iberian Peninsula. — *Ann. Bot. Fennici* 47: 307–311.

Two new species of *Taraxacum* are described and illustrated. *Taraxacum decastroi* A. Galán & Vicente Orell. was found in the Spanish Pyrenees, while *T. lacianense* A. Galán & Vicente Orell., was collected in the Cantabrian Mountains.

Key words: angiosperms, biodiversity, morphology, new species, taxonomy

Studies of the genus *Taraxacum* (Asteraceae) are still scarce for the Pyrenees (De Langhe & Van Soest 1972, Sahlin 1981, 1984a, 1984b) and the Cantabrian Mountains, in northern Spain (Van Soest 1954, Galán de Mera & Vicente Orellana 2009). In the scope of the revision of *Taraxacum* for the *Flora iberica* project (Castroviejo 1986–2009), some new species have been found in these mountain ranges. Two of them are similar to *T. reophilum* (Van Soest 1959), growing on humid soils near watercourses and in peat bogs. After the study of the type material of *T. reophilum* (Van Soest 31071: L 2648; Van Soest 31071a: L 2649; Van Soest 31067: L 2650), an alpine plant with long gracile leaves and dark involucre, and the material of our field work and various herbaria (ARAN, BC, BCN, BR, JACA, L, LEB, MA, MAF, SANT, USP, and W, as well as in Sánchez Pedraja's private herbarium), we conclude the presence of two new species for the Spanish flora. They are apomictic, without pollen or with very few pollen grains,

and with very located distributions, maybe due to climatic mountain conditions (Richards 2003).

Taraxacum decastroi A. Galán & Vicente Orell., *sp. nova* (Figs. 1 and 2)

Planta robusta ad 40 cm. Folia laete viridia late lanceolata; lobi laterales 5–7, lati, acuti, mucronati, deltoidei, interdum sine dentes; lobus terminalis subaequalis, triangularis ad hastatum; petiolus viridis, alatus. Scapi erecti, folia in anthesis superantes, viridi ad tenuiter purpureos. Calathium croceum, radians ca. 30 mm in diametro; squamae exteriores adpressae, atrovirides, leviter albomarginatae, ecallosae vel ecorniculatae, apice margineque interdum ciliolatae; ligulae extus stria purpurea ornatae; antherae parce polliniferae, pollen valde irregulare; styli stigmatique croceos. Achenium olivaceum, nitidum, corpore squamuloso et apice spiculis numerosis, pyramide conica, rostro viridulo, pappo albo.



Fig. 1. Holotype of *Taraxacum decastroi*.

TYPE: Spain. Lérida, subida al Parque Nacional de Aiguestortes, borde de regato bajo *Abies*, 1540 m, 12.VII.2008 A. Galán 2084 & J.A. Vicente (holotype MA; isotypes JACA, USP). — PARATYPE: Spain. Lérida: Espot, Estany de la Llosa, granit, 2340 m, 9.VIII.1981 A. Carrillo & J.M. Ninot (BCN).

Robust plants, to 40 cm. Leaves 9–28.5 × 1.2–5 cm, spatulate to lanceolate, pinnatifid to pinnatipartite; midrib green, winged; lateral lobes 5–7, 9.1–25.5 × 8–25.6 mm, asymmetric, deltoid, mucronulate, with distal margin entire or toothed, straight to sigmoid, and proximal one entire, straight to concave; terminal lobe 17.1–32.8 × 16.7–29.1 mm, triangular to hastate and sometimes with margins lightly convex, mucronulate; petiole green, winged. Scapes green to lightly purple, erect, longer than leaves at flowering. Capitulum ca. 30 mm in diam-

eter; involucre 12.7–19.7 × 4.1–7.5 mm; exterior phyllaries 4.7–6.7 × 1.6–3.4 mm, erect, ovate to ovate-lanceolate, dark green and sometimes ciliolate on margins and tip, neither horned nor corniculated, and with inconspicuous white borders; ligules ca. 12 mm long, saffron yellow, striped purple; pollen very scarce and with irregular size; stigma branches saffron yellow. Achenes olive-green, shining; body 2.8–3.2 mm long, with bitricuspidate scales and numerous small spikelets to tip; pyramid 0.4–0.7 mm long, conic; rostrum 8.1–8.7 mm long, whitish to olive-green and pappus 5.5–6.4 mm long, white.

DISTRIBUTION. *Taraxacum decastroi* grows in the Spanish Pyrenees, between 1540–2340 m, in very humid soils in *Abies alba* forests, and flowers in the summer (June and July).

ETYMOLOGY. We have dedicated this species to our friend Dr. Emilio de Castro, a well-known Spanish naturalist.

***Taraxacum lacianense* A. Galán & Vicente Orell., sp. nova (Figs. 2 and 3)**

Planta gracilis ad 60 cm. Folia laete viridia late lanceolata; lobi laterales 4–8, lati, acuminate, deltoidei, dentati; lobus terminalis subaequalis, triangularis ad hastatum; petiolus viridis, alatus. Scapi erecti, folia in anthesis superantes, viridi ad spadiceos, interdum nitidos purpureos. Calathium croceum, radians ca. 30 mm in diametro; squamae exteriores adpressae ad recurvatas, atrovirides, leviter albomarginatae, ecallosae vel ecorniculatae, apice et margine semper ciliolatae; ligulae extus stria purpurea ornatae; antherae vacuae; styli stigmataque croceos. Achenium stramineum vel olivaceum, corpore squamuloso apice ulla spiculis, pyramide conica, rostro stramineo vel olivaceo, pappo discolori.

TYPE: Spain. León, Villablino, Buenverde, talud húmedo, 1500 m, 17.VII.2007 J.A. Vicente (holotype MA; isotypes JACA, LEB, USP). — PARATYPES: Spain. León: Villablino, Buenverde, en un talud de piedra húmedo, 1500 m, 24.VI.2008 A. Galán 2087 & J.A. Vicente (MA, USP).

Slender plants, to 60 cm. Leaves 4.3–30 × 1.2–5.4 cm, spatulate to lanceolate, pinnatifid to pinnatipartite; midrib green to brownish, winged; lateral lobes 4–8, 4.1–24.7 × 6.7–24.8 mm, asymmetric, triangular to deltoid, acuminate, with the distal margin toothed, straight to concave, and the proximal one entire, straight to concave; terminal lobes 11.2–39.8 × 12.6–44.4 mm, triangular to hastate sometimes with the margins lightly convex, acuminate to mucronulate; petiole green, winged. Scapes green to brownish, sometime lightly purple, erect longer than leaves at flowering. Capitulum ca. 30 mm in diameter; involucre 13.5–21.2 × 7.5–8.7 mm; exterior phyllaries 3.8–9.1 × 1.5–2.5 mm, erect to recurved, ovate-lanceolate, dark green, ciliolate on the margins and the tip, neither horny nor corniculated, and with an inconspicuous white border; ligules 8.6–14.7 mm long, saffron yellow, striped purple; anthers without pollen; stigma branches saffron yellow. Achenes straw-coloured to olive-green; body 3.8–4.6 mm long, with erose

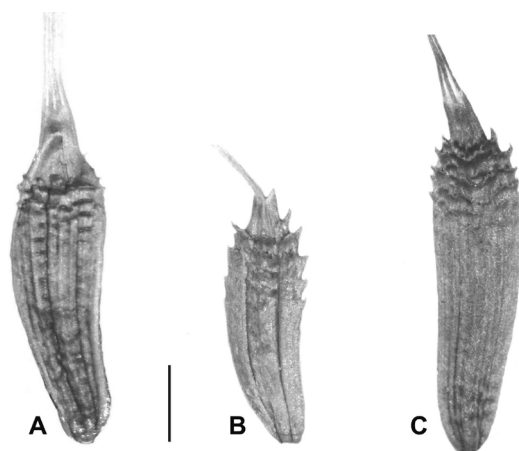


Fig. 2. Achenes. — A: *Taraxacum reophilum* (from Van Soest 31071, isotype). — B: *T. decastroi* (from the holotype). — C: *T. lacianense* (from the holotype). Bar = 1 mm.

to tricuspidate scales and some small spikelets to the tip; pyramid 0.4–0.8 mm long, conic; rostrum 6.6–8.1 mm long, straw-coloured to olive-green; pappus 6.2–7.8 mm long, discoloured.

DISTRIBUTION. *Taraxacum lacianense* is endemic to NW Spain (León Mountains). It grows in peat bogs on humid slate-rocks with accumulated soil, at 1500 m, in *Betula alba* forests. Its flowering takes place in June. It has been found in the Laciana region only (where it takes the specific name), in the León province of Spain.

Discussion

Taraxacum decastroi and *T. lacianense* are similar to *T. reophilum* from the Alps (Van Soest 1959). However, *T. reophilum* has polliniferous anthers, straw-coloured achenes with the body only with entire, erose or bicuspidate small scales, sometimes with some tubercle to the tip, rostrum 5–6 mm long, and white pappus. *Taraxacum lacianense* differs from *T. decastroi* by the leaves with lateral lobes triangular to deltoid, acuminate, straight to concave; anthers without pollen, achenes straw-colored to olive-green, body longer, and pappus discoloured. Characters of *T. reophilum*, *T. decastroi* and *T. lacianense* are presented in Table 1.

The assignment of the new species to sections within *Taraxacum* is problematic, because

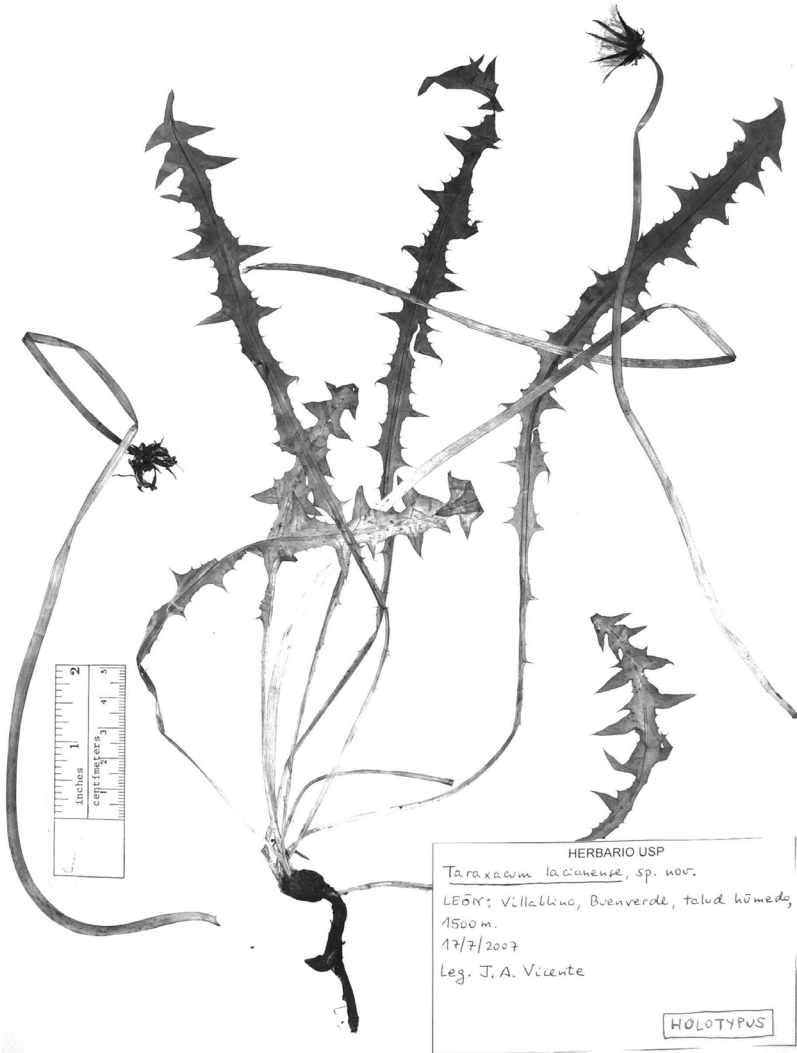


Fig. 3. Holotype of *Taraxacum lacianense*.

morphological limits between the sections are often imprecise (Matysiak 1994, Wittzell 1999). Our new species have certain resemblance to the sections *Fontana*, *Alpestris* and *Ruderalia*.

Van Soest (1959), when describing *T. reophilum* indicated that it can be considered to lie between the *Vulgaria* (*Ruderalia*) and *Fontana* sections, and that it seems to be related to *T.*

Table 1. Principal differences between *Taraxacum reophilum*, *T. decastroi* and *T. lacianense*.

Characters	<i>T. reophilum</i>	<i>T. decastroi</i>	<i>T. lacianense</i>
Plant	graceful, to 30 cm	robust, to 40 cm	graceful, to 60 cm
Lateral lobes	acuminate	mucronate	acuminate
Terminal lobe	16–35.7 × 16.1–35.7 mm	17.1–32.8 × 16.7–29.1 mm	11.2–39.8 × 12.6–44.4 mm
Pollen	abundant, irregular size	scarce, irregular size	absent
Body of achenes	3.8–4.3 mm	2.8–3.2 mm	3.8–4.6 mm
Body ornaments	small scales or tubercles	with numerous spikelets	with few spikelets
Pyramid length	0.7–1.2 mm	0.4–0.7 mm	0.4–0.8 mm
Pappus length	5–6.5 mm	5.5–6.4 mm	6.2–7.8 mm
Colour pappus	white	white	discolour
Habitat	along brooks	along brooks	peat bogs on humid slate-rock

aestivum, from which it differs by a shorter rostrum. However, the main *Ruderalia* characters are not present in *T. reophylum* (Richards & Sell 1984, Dudman & Richards 1997, Øllgaard & Räsänen 2008, Trávníček *et al.* 2008). These are: heads with recurved or reflexed phyllaries, yellow ligules and subcylindrical pyramids in the achenes. However, *T. binilobatum* (France, Switzerland), was included by Sahlin (1982) in section *Fontana* in spite of its pure yellow stigmas and recurved exterior phyllaries.

EuroMed Plant Base project (Kirschner *et al.* 2007–2009) consider *T. reophylum*, which is the type of section *Alpestris* (Kirschner & Štěpánek 1997), along with the Iberian species *T. ptilotoides*, *T. solenanthinum* and *T. stylosum*. However, the latter are very different from *T. decastroi* and *T. lacianense*. *Taraxacum ptilotoides* is to 12 cm high, with leaves with teeth hamate, lateral and terminal lobes trilobate or sagittate, outer phyllaries recurved to reflexed, neither horny nor corniculated, and white pappus. *Taraxacum solenanthinum* is to 27 cm high, with leaves with sigmoid lateral lobes and the terminal one triangulate, outer phyllaries erect to spreading, horny, and white pappus. Finally, *T. stylosum* is to 14 cm high, with leaves with deltoid or hamate lateral lobes and the terminal one triangulate or sagittate, outer phyllaries recurved or reflexed, neither horny nor corniculated, and white pappus.

Pending clarification of the sectional division, we consider that the new species, with dark involucre and growing in humid habitats of the mountains of the northern Iberian Peninsula, belong to a group which also includes *T. reophylum* and *T. aestivum* of the Alps.

Acknowledgements

The loan of the material and the facilities of the curators of the consulted herbaria are gratefully acknowledged. This study was supported by the “Flora iberica VIII” project (CGL2008-02982-C03-01/CLI, Ministerio de Ciencia e Innovación, Spain).

References

Castroviejo, S. (coord.) 1986–2009: *Flora iberica*. — Con-

- sejo Superior de Investigaciones Científicas, Madrid.
- De Langhe, J. E. & Van Soest, J. L. 1972: Deux *Taraxacum* nouveaux découverts dans les Pyrénées et en Auvergne: *Taraxacum litophyllum* De Langhe et Van Soest et *Taraxacum arvernium* De Langhe et Van Soest. — *Bulletin de la Société Royale de Botanique de Belgique* 105: 115–118.
- Dudman, A. A. & Richards, A. J. 1997: *Dandelions of Great Britain and Ireland*. — Botanical Society of the British Isles, London.
- Galán de Mera, A. & Vicente Orellana, J. A. 2009: Two new species of *Taraxacum* from the high mountain of the Iberian Peninsula. — *Annales Botanici Fennici* 46: 133–137.
- Kirschner, J. & Štěpánek, J. 1997: A nomenclatural checklist of supraspecific names in *Taraxacum*. — *Taxon* 46: 87–98.
- Kirschner, J., Štěpánek, J. & Greuter, W. 2007–2009: *Taraxacum* F. H. Wigg. — In: Greuter, W. & Von Raab Straube, E. (eds.), *The Euro + Med Plant base*. Available at <http://ww2.bgbm.org/EuroPlusMed/>
- Matysiak, J. P. 1994: Les sections des *Taraxacum* du nord de la France. — *Bulletin de la Société Botanique du Nord de la France* 47: 1–4.
- Øllgaard, H. & Räsänen, J. 2008: Six new *Taraxacum* species (Asteraceae) from Finland and adjacent countries. — *Annales Botanici Fennici* 45: 375–385.
- Richards, A. J. 2003: Apomixis in flowering plants: an overview. — *Philosophical Transactions of the Royal Society of London B* 358: 1085–1093.
- Richards, A. J. & Sell, P. D. 1984: *Taraxacum* Weber. — In: Tutin, T. G., Heywood, V. H., Burges, N. A., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (eds.), *Flora Europaea*, vol. 4 (2nd reprint): 332–343. Cambridge University Press, Cambridge etc.
- Sahlin, C. I. 1981: Deux nouvelles espèces de *Taraxacum* d'Espagne. — *Collectanea Botanica* (Barcelona) 12: 167–170.
- Sahlin C. I. 1982: *Taraxacum* species new to Switzerland. — *Bulletin du Jardin Botanique National de Belgique* 52: 387–396.
- Sahlin, C. I. 1984a: New Pyrenean species of *Taraxacum* (Compositae). — *Pirineos* 121: 5–27.
- Sahlin, C. I. 1984b: Two new species of *Taraxacum* from the Pyrenees. — *Bulletin Société pour l'échange des plantes vasculaires de l'Europe occidentale et du Bassin Méditerranéen* 19: 113–114.
- Trávníček, B., Kirschner, J. & Štěpánek, J. 2008: Five new species of *Taraxacum* sect. *Ruderalia* from central Europe and Denmark. — *Preslia* 80: 27–59.
- Van Soest, J. L. 1954: Sur quelques *Taraxaca* de la province de Santander. — *Trabajos del Jardín Botánico de Santiago de Compostela* 7: 5–9.
- Van Soest, J. L. 1959: Alpine species of *Taraxacum*. — *Acta Botanica Neerlandica* 8: 77–138.
- Witzell, H. 1999: Chloroplast DNA variation and reticulate evolution in sexual and apomictic sections of dandelions. — *Molecular Ecology* 8: 2023–2035.